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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/776,540

02/09/2004

Ricky Smith

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10/05/2006

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EXAMINER

KIKNADZE, IRAKLI

ART UNIT

PAPER NUMBER

2882

DATE MAILED: 10/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/776,540

Applicant(s)

SMITH, RICKY

Examiner

Irakli Kiknadze

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-12, 15, 16 and 19-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 29-32 and 35-39 is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-12, 15, 16, 19-28, 33, 34 and 40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/13/2004.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

1. In response to the Office action dated May 1, 2006 the Amendment has been received on July 27, 2006.

Claims 1-4, 6-12, 15, 16 and 19-40 are currently pending in this application.

The indicated allowability of claims 1-9, 20-28, 33 and 34 is withdrawn in view of the newly discovered reference(s) to Haberrecker (US Patent 4,819,260). Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 4, 6, 8-12, 15, 16, 19, 20, 23-27, 33, 34 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Haberrecker (US Patent 4,819,260).

With respect to claim 1, Haberrecker teaches a cathode head suitable for use in an x-ray device, the cathode head comprising (see Fig. 3; column 3, lines 21-27):

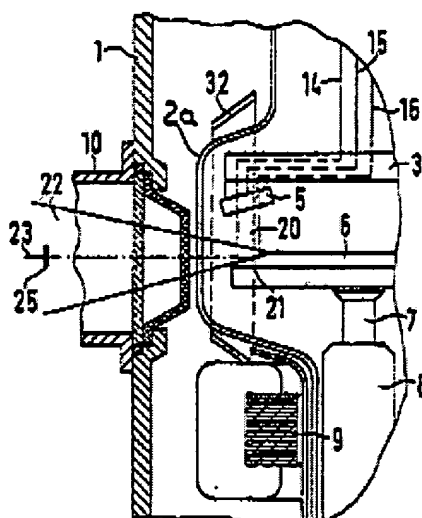


FIG 3

an emitter block (3);

an emitter (5) attached to the emitter block (3) and configured to generate electrons of an electron beam (column 4, line 14); and

at least one magnetic element (32) that defines an opening within which a portion of the emitter (5) is positioned (column 4, lines 4-21).

With respect to claim 2, Haberrecker teaches that the at least one magnetic element (32) comprises at least one electromagnet (column 4, lines 4-21).

With respect to claim 4, Haberrecker teaches that the emitter block is substantially non-magnetic (column 4, lines 19-21).

With respect to claim 6, Haberrecker teaches that the emitter defines a longitudinal axis which extends through the opening defined by the at least one magnetic element (32) (see Fig. 3).

With respect to claim 8, Haberrecker teaches that the at least one magnetic element (32) and the emitter block (3) cooperate to create a magnetic field through which at least a portion of the electron beam (20) passes (Fig. 3; column 4, lines 4-19).

With respect to claim 9, Haberrecker teaches that the emitter (5) comprises at least one filament (column 3, lines 25-29).

With respect to claim 33, Haberrecker teaches that at least one magnetic element (32) is arranged such that flux lines of a magnetic flux density of a magnetic field associated with the at least one magnetic element are substantially perpendicular to a direction of travel of the electron beam (20) generated by the emitter (column 4, lines 4-21).

With respect to claims 10 and 40, Haberrecker teaches a cathode head suitable for use in an x-ray device and comprising (Fig. 3):

a magnetic (capable of being magnetized) emitter block (3);

an emitter (5) attached to the emitter block (3) and configured to generate electrons for an electron beam (20) that defines a focal spot (column 3, lines 21-30); and means (32) for facilitating focal spot control (column 3, lines 67 and 68), wherein the means (32) generates a magnetic field with a magnetic flux density having flux lines that are substantially perpendicular to a direction of travel of the electron beam (20) (column 4, lines 4-21).

With respect to claim 11, Haberrecker teaches that the means for facilitating focal spot control adjusts a position (size) of a focal spot on a target (6) (column 4, lines 13-21).

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With respect to claim 12, Haberrecker teaches that the means for facilitating focal spot control enables at least lateral adjustments to a position of the focal spot (column 4, lines 13-21).

With respect to claim 15, Haberrecker teaches that the means for facilitating focal spot control implements an adjustable deflection of the electron beam (20) (column 4, lines 13-21).

With respect to claim 16, Haberrecker teaches that the means for facilitating focal spot control acts on the electron beam (20) in a location proximate the emitter (5) (Fig. 3, column 4, lines 3-21).

With respect to claim 19, Haberrecker teaches that the means for facilitating focal spot control cooperates with the emitter block (3) to create a magnetic field through which at least a portion of the electron beam passes (20) (Fig. 3; column 8, column 4, lines 3-21).

With respect to claim 20, Haberrecker teaches an x-ray device (Figs. 1 and 3), comprising:

- a vacuum enclosure;

- an anode (6) substantially disposed within the vacuum enclosure, the anode including a target surface (column 1, lines 21-32); and

- a cathode head (3) substantially disposed within the vacuum enclosure and comprising:

- an emitter block;

an emitter (5) attached to the emitter block and configured to emit electrons of an electron beam (20) that defines a focal spot on the target surface of the anode (6) (column 1, lines 21-32); and at least one magnetic element (32) that defines an opening within which a portion of the emitter is positioned (Fig. 3; column 4, lines 4-21).

With respect to claim 23, Haberrecker teaches that the emitter block comprises the emitter that consists of non-magnetic material, such as Remanit 4550 (column 4, lines 19-21).

With respect to claim 24, Haberrecker teaches that the emitter block (3) is capable of being magnetized by the magnetic element (32) (column 1, lines 65-68).

With respect to claim 25, Haberrecker teaches that the emitter defines a longitudinal axis which extends through the opening defined by the at least one magnetic element (32) (see Fig.3).

With respect to claim 26, Haberrecker teaches that the at least one magnetic element (32) and the emitter block cooperate to create a magnetic field through which at least a portion of the electron beam (20) passes (column 1, lines 65-68 and column 4, lines 4-21).

With respect to claim 27, Haberrecker teaches that the anode (6) is a rotating anode (column 3, lines 28-33).

With respect to claim 34, Haberrecker teaches that at least one magnetic element (32) is arranged such that flux lines of a magnetic flux density of a magnetic field associated with the at least one magnetic element are substantially perpendicular

to a direction of travel of the electron beam (20) generated by the emitter (column 4, lines 4-21).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3, 22 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haberrecker (US Patent 4,819,260).

With respect to claims 3 and 22, Haberrecker teaches claimed invention except that the at least one magnetic element comprises at least one permanent magnet. It would have been obvious to one of ordinary skill in the art at the time the invention was made use the permanent magnet instead of electromagnet to created magnetic field in the system of HaberrackEr, since it was known in the art that magnetic means consisting of permanent magnets, either electromagnets capable of creating a magnetic field that would influence trajectory of an electron beam.

With respect to claim 28, Haberrecker teaches claimed invention except for a stationary anode. It is well known in x-ray art that the rotating anode can cause migration of the focal spot due to vibrations induced by the mechanical rotation. It would have been obvious to one of ordinary skill in the art at the time the invention was made

to employ the stationary in the apparatus of Habbercker, sense such a modification would prevent migration of the focal spot due to vibrations induced by the mechanical rotation and provide user with the improved x-ray tube, wherein an x-ray beam of uniform distribution and constant position is emitted.

6. Claims 7 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haberrecker (US Patent 4,819,260) as applied to claims 1 and 20 above, and further in view of Foest (US patent 6,055,294).

With respect to claims 7 and 21, Haberrecker teaches claimed invention except a pair of electromagnets, each of which defines an opening within which a respective portion of the emitter is positioned. Foest teaches a magnetic element comprising a pair of electromagnets (31a and 31b) creating a magnetic field for better controlling an electron beam originated from a cathode (column 4, lines 25-36). It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the pair of electromagnet as suggested by Foest in the apparatus of Habbercker, sense such a modification would provide user with a greater control or adjustment over the electron beam for preventing migration of the focal spot on the rotating anode.

Allowable Subject Matter

7. Claims 29-39 are allowed.

8. The following is a statement of reasons for the indication of allowable subject matter:

With respect to claims 29-39, prior art fails to teach or make obvious a cathode head suitable for use in an x-ray device and comprising: a filament attached to an emitter block and defining a longitudinal axis and first and second magnetic elements that define respective openings within which the emitter block is positioned as claimed including all of the limitations of the base claim and any intervening claims.

Response to Arguments

9. Applicant's arguments with respect to claims 10-19 and 40 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Dumitrescu et al. (US Patent 5,224,143), Chidester et al. (US Patent 6,438,207 B1), Evain et al. (US Patent 5,125,019) and Lemaitre et al. (US Patent 6,968,039 B2) teach the focal spot position adjustment systems for the x-ray imaging tubes.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irakli Kiknadze whose telephone number is 571-272-2493. The examiner can normally be reached on 9:00-5:30.

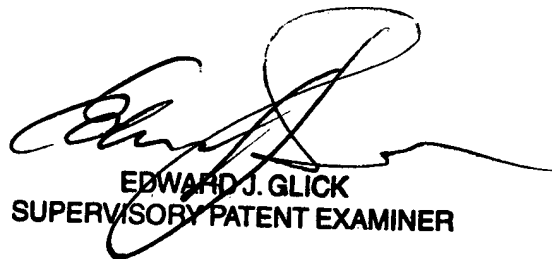
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on 571-272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Irakli Kiknadze
September 28, 2006

IK



EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER